

Amendments to the Claims:

1--40. (canceled)

41. (currently amended) A method for determining causes of failures in industrial processes, comprising:

selecting a set of different plurality of distinct industrial process variables for analysis; measuring the selected variables at selected measuring points on a production line over time until a failure indication is detected in ~~one~~ a first of the selected variables;

detecting an abnormal deviation in one or more others of the selected variables;

determining time correlations a time correlation between the failure indication and any deviations in the other measured variables each abnormal deviation;

excluding correlations that indicate a consequential effect, and not a cause of the failure indication

finding an upstream location on the production line that is a source of a failure by correlating the first of the selected variables with the other selected variables having abnormal deviations, and projecting backwards in time to a convergence of the first and other variables in time or location on the production line;

, and determining the a cause of the failure indication without a need for detecting a second failure;

working-out corrective measures to eliminate the cause of the failure indication;

evaluating the corrective measures technically and economically;

selecting and implementing an optimum one of the corrective measures on the production line; and

wherein the production line comprises an automation system and control bus that automate the production line, and wherein the measuring of at least some of the selected variables is performed directly from at least some of the measuring points on the production line without passing through the control bus.

42. (currently amended) The method of claim 41, wherein the production line produces a continuously moving web of material, and further comprising determining a relative time offset for each of the selected measuring points based on a speed of the web passing through the production line, and applying the time offsets to the selected variables to correlate deviations in the selected variables that are offset in time to locate a position of a failure on the production line.

43. (canceled)

44. (previously presented) The method of claim 41, wherein the measuring step comprises time-stamping samples of the selected variables using a time signal from a global positioning system receiver connected to the measuring and evaluation system.

45. (previously presented) The method of claim 41, wherein the evaluation system continuously performs elimination routines to isolate variables directly related to the failure to determine the location on the production line of the failure.

46. (previously presented) The method according to claim 41 further comprising determining if a sub-process in the industrial process is the location of the failure to determine the cause of the failure.

47. (previously presented) The method according to claim 46 further comprising determining if the cause of the failure is located in the sub process, and evaluating the sub process to determine a root cause of the failure.

48. (previously presented) The method according to claim 41 further comprising communicating correlation data to a service provider that provides service in the event of a failure in the industrial process to correct the failure.

49. (currently amended) The method according to claim 41 comprising:

    determining correlations between the ~~different measured process~~ selected variables and the time and location of the failure by time-correlating an effect of the failure detected in the ~~process~~ selected variables with a location on the production line of a cause of the failure based on a production speed, without a need for detecting a second failure; and

    outputting the ~~process~~ selected variables correlating with the time and location of the failure.